REMARKS

Applicants wish to thank the Examiner for considering the present application. In the Office Action dated September 11, 2002, claims 1-21 are pending in the application. Applicants acknowledge the allowability of claim 8 if rewritten in independent form. Claim 8 has been rewritten in independent form and presented herein as new claim 22, which should now be allowable. Claim 8 has been amended to depend from Claim 7 instead of Claim 6. New Claim 23 is similar to new claim 22 but recites "TDMA" instead of "FDMA".

Claims 1, 2, and 5-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Silberger* (6,028,884) in view of *Dai* (6,298,238) and *Prieto* (6,381,228). Applicants respectfully traverse.

Claim 1 is directed to a method for allocating system resources in a multi-platform communication system that has a plurality of individual transponding nodes. A plurality of local user signals are processed at a ground hub to compensate for differential propagation delays to any one of a plurality of remote users. Each of said plurality of remote users is assigned a profit value, which is dependent upon certain predetermined user criteria. Each of said plurality of remote users is also assigned one or more resource cells in platform-code space depending upon service requirements of each of said plurality of remote users. The claim has been amended to clarify that the at least one of the users is assigned the same platform code in more than one transponding node. Each resource cell that is assigned to a particular user enables him to transmit signals to or from the hub through a particular one of said transponder nodes using a particular code.

Conventional systems allocate one code from one platform to a particular user. In the present invention, however, multiple platforms may be used for one user. Thus, more than one transponding node is assigned to one user and coded signals associated with each user may come from more than one platform. As contemplated by the present invention, although signals associated with a particular user may be coming from different platforms, the same code will be used for this particular user.

The present invention reduces the amount of resources used by the system by assigning each of said plurality of remote users one or more resource cells in platform-code space depending upon service requirements of each of said plurality of remote users. Amended claim 1 now recites that at least one of the users is assigned a same platform code in more than one node. Such a system is not taught or suggested in *Silberger*. *Silberger* assigns system resources to users, but users are not assigned the same code to signals transmitted to the user from different transponding nodes.

The *Dai* reference is cited for teaching compensating for differential propagation delays. The Examiner points to Fig. 5 and Col. 9, lines 66 through Col. 10, line 23 for this proposition. The system determines the actual "in air" delay time and subtracts the delay experienced by the signal during the processing at the *user terminal.* This portion refers to determining the delays which in turn are used for determining the user terminal position. Because they are used for determining delays at the user terminal, the *Dai* reference does not "process a plurality of local user signals at the *ground hub* to compensate for propagation delays." The user position in *Dai* is compensated based upon the Doppler shift or the time delays, and thus the signals are not "compensated" as recited in the present application.

As the Examiner admits, the *Silberger* and *Dai* references fail also to teach or suggest assigning a profit value to each of the users in addition to the drawbacks pointed out above. The *Prieto* reference is cited for teaching assigning profit values to each of the remote users. Although the *Prieto* system decides whether to grant, deny or delay the request based on the service and price class of a user, the *Prieto* system does not teach allocating more than one code from different nodes to one user based on the profit value of the users. Therefore, even if the references are combined, the combination neither teaches nor suggests the present invention. The combination of the references do not teach or suggest, for example, how system resources can be allocated in a multi-platform communication system by assigning a same platform code to one user in more than one transponding node. The present invention, as claimed for example in Claim 1, makes it possible for particular communication signals destined for a particular user to be split between several of the nodes and structured in a manner

so that they are received at the user in the proper order. This is not taught or suggested in any of the three references cited. As shown in Fig. 11 of the present application, the entirety of resource cells from each of the platforms is used and thus more than one of the nodes may have a common code assigned to one user to provide service to the users.

Claims 2, 5, 6, and 7 depend from Claim 1 and are believed to be allowable for the same reasons set forth above in connection with Claim 1 and further due to the additional limitations recited therein.

Claim 3 stands rejected for the same reasons set forth above with respect to claim 1 in further view of *Coleman* (6,205,320). Applicants respectfully traverse. The *Coleman* reference fails to teach or suggest the missing limitations set forth above. Therefore, because claim 3 is a further limitation of claim 1, claim 3 should also be allowable.

Claim 4 stands rejected for the same reasons set forth above with respect to claim 1 in further view of *Lemelson* (6,084,510). Applicants respectfully traverse. The *Lemelson* reference fails to teach or suggest the limitations set forth above with respect to claim 1. Therefore, because claim 4 is a further limitation of claim 1, claim 4 should also be allowable for the same reasons set forth above.

Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Silberger* in view of *Prieto*. Applicants respectfully traverse.

Both the *Silberger* reference and the *Prieto* reference were discussed above in connection with Claim 1. Claim 9 has been amended in a similar manner to that of claim 1 to further clarify that the system uses multiple transponding nodes and that the multiple transponding nodes may use the same code for a particular user. Both *Silberger* and *Prieto* reference do not teach using the same code for the same user over multiple nodes. Therefore, the combination of *Prieto* and *Silberger* do not teach or suggest the limitations set forth in amended claim 9.

Claims 12, 15, 16, and 17 stand rejected for the same reasons set forth with respect to claim 9. These claims are dependent on claim 9 and are allowable for the same general reasons discussed above in connection with Claim 9 and further due to the

additional limitations. Therefore, applicants respectfully request the Examiner for reconsideration of these rejections.

Claim 11 stands rejected for the same reasons set forth with respect to claim 1. Claim 11 depends from Claim 9 and further recites that the central hub pre-processes signals for forward link transmission such that that signals are radiated with compensating time delays to an intended one of said plurality of mobile users who coherently receives all such signals intended for the user. The three cited references do not teach or suggest the use of more than one transponding node for transmitting signals with the same code for the same user and compensating time delays performed at the central hub such that the intended user coherently receives all such signals. Consequently, particular communication signals destined for a particular user may be split between several of the nodes and processed as recited in Claim 11 so that they arrive coherently at the intended user. This is neither suggested nor shown by the cited references. Claim 11 should be allowable for the same reasons set forth above with respect to claim 9 and with respect to claim 1 and further due to the additional limitations discussed above. Claim 11 has been herein amended to improve clarity.

Claim 13 stands rejected for the same reasons set forth with respect to claim 9 in further view of *Coleman*. Claim 13 is a further limitation of claim 9. *Coleman* does not teach or suggest the missing limitations of *Silberger* and *Prieto* described above. Therefore, applicant respectfully requests the Examiner for reconsideration of this rejection.

Claim 14 stands rejected for the same reasons set forth with respect to claim 9 in further view of *Lemelson*. Claim 14 is a further limitation of claim 9 and thus should be allowable for the same reasons set forth above in claim 9. The *Lemelson* reference does not teach or suggest the missing limitations in *Prieto* or *Silberger*.

Claim 18 stands rejected as being unpatentable over *Silberger* in view of *Prieto*. Claim 18 also has been amended to clarify that the same code may be used in more than one transponding node for signals transmitted through one or more transponder nodes destined for the same user. As described above (in connection with Claim 9),

this aspect is neither suggested nor shown in either the *Silberger* reference or the *Prieto* reference.

Claims 19, 20, and 21 which depend from Claim 18 are believed to be allowable for the same reasons set forth with respect to claim 18 and further due to the additional limitations recited therein.

In light of the remarks above, applicants submit that all objections and rejections are now overcome. Reconsideration and withdrawal of the rejections are respectfully requested. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments, which would place the application in better condition for allowance, he is respectfully requested to call the undersigned attorney.

Remarks concerning attachments to Office Action dated September 11, 2002:

On one of the PTO-1449 forms submitted by Applicant and date-stamped by the Technology Center 2600 as having been received on November 29, 2001, the Examiner has initialed all of the documents excepting one (EP 0682 416 A). Since this document was submitted with the IDS it appears that this is just an oversight. The Office is requested to correct this omission and send the undersigned another copy of the PTO-1449 form with all of the documents initialed. For the Examiner's convenience, a copy of the form in question is enclosed herewith with the particular document highlighted. The Examiner is requested to contact the undersigned attorney if he would like another copy of this document to be resubmitted.

Also one of the attachments to the Office Action was an Information Disclosure citation Form PTO A820 for some other application. Therefore, that form is being returned concurrently under separate cover.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (Amended) A method for allocating system resources in a multi-platform communication system, comprising:

providing a plurality of individual transponding nodes;

processing a plurality of local user signals at a ground hub to compensate for differential propagation delays to any one of a plurality of remote users;

assigning each of said plurality of remote users a profit value, which is dependent upon certain predetermined user criteria;

assigning each of said plurality of remote users one or more resource cells in platform-code space depending upon service requirements of each of said plurality of remote users, at least one of said users assigned a same platform code in more than one node;

wherein each resource cell assigned to a particular user enables [him]the particular user to transmit signals to or from the hub through a particular one of said [transponder]transponding nodes and using a particular code.

8. (Amended) The method of claim [6]7 wherein said total profit/utility value is maximized according to the following constraints:

$$\sum_{i=1}^{Nu} \delta_{ij} P_{ij} \leq P_j$$

$$\delta_i = \underset{j=1}{\overset{n_i}{\mathrm{OR}}}\, \delta_{ij}$$

$$\sum_{i=1}^{Nu} \delta_i b_i \leq B .$$

9. (Amended) A mobile wireless communication system for a variety of different mobile user types, comprising:

a plurality of individual transponding nodes;

a plurality of individual resource cells each associated with a particular one of said plurality of individual transponding nodes and a particular one of a plurality of available codes wherein more than one of the plurality of available codes are shared over more than one node;

a plurality of mobile terminals, each of which is assigned to operate in one or more of said plurality of individual resource cells;

a profit value assigned to each of said plurality of mobile terminals; and

a central hub for establishing links with one or more of said plurality of mobile terminals and for assigning one or more of said resource cells to each of said plurality of mobile terminals and for assigning said profit value to each of said plurality of mobile terminals, said central hub assigning one or more of said resource cells in response to said profit value.

11. (Amended) The system of claim 9, wherein said central hub pre-processes signals for forward link transmission such that [they]the signals are radiated with compensating time delays to an intended one of said plurality of mobile users [who coherently receives all such signals intended for him]such that all the signals intended for the intended one of said plurality of mobile users are coherently received by the intended one of said plurality of mobile users; and

wherein said central hub post-processes received signals to introduce compensating time delays such that all such signals received from a particular remote user may be coherently processed together.

18. (Amended) A method for allocating system resources in a multi-platform communication system, comprising:

providing a plurality of mobile users;

establishing a link between each of said plurality of mobile users and a ground hub through one or more of a plurality of transponding nodes;

processing a plurality of local user signals at said ground hub;

assigning each of said plurality of mobile users an individual profit value indicative of a particular type of service requested by said mobile user; and

transmitting signals to or from said ground hub through one or more of said [transponder modes] transponding nodes and one or more resource cells that have the same code in more than one of said transponder nodes destined for the same user.

Please add the following new claims:

22. (New) A method for allocating system resources in a multi-platform communication system, comprising:

providing a plurality of individual transponding nodes;

processing a plurality of local user signals at a ground hub to compensate for differential propagation delays to any one of a plurality of remote users;

assigning each of said plurality of remote users a profit value, which is dependent upon certain predetermined user criteria;

assigning each of said plurality of remote users one or more resource cells in platform-code space depending upon service requirements of each of said plurality of remote users;

wherein each resource cell assigned to a particular user enables the particular user to transmit signals to or from the hub through a particular one of said transponder nodes and using a particular code; and

wherein said system utilizes a FDMA technique and said total profit/utility value is maximized according to the following constraints:

$$\sum_{i=1}^{Nu} \delta_{ij} P_{ij} \le P_j$$

$$\delta_i = \underset{j=1}{\overset{n_t}{\mathrm{OR}}}\, \delta_{ij}$$

$$\sum_{i=1}^{Nu} \delta_i b_i \le B .$$

23. (New) A method for allocating system resources in a multi-platform communication system, comprising:

providing a plurality of individual transponding nodes;

processing a plurality of local user signals at a ground hub to compensate for differential propagation delays to any one of a plurality of remote users;

assigning each of said plurality of remote users a profit value, which is dependent upon certain predetermined user criteria;

assigning each of said plurality of remote users one or more resource cells in platform-code space depending upon service requirements of each of said plurality of remote users;

wherein each resource cell assigned to a particular user enables the particular user to transmit signals to or from the hub through a particular one of said transponder nodes and using a particular code; and

wherein said system utilizes a TDMA technique and said total profit/utility value is maximized according to the following constraints:

$$\sum_{i=1}^{Nu} \delta_{ij} P_{ij} \le P_j$$

$$\delta_i = \underset{j=1}{\overset{n_t}{\mathrm{OR}}}\, \delta_{ij}$$

$$\sum_{i=1}^{Nu} \delta_i b_i \le B .$$

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In re: Patent Application of Kar W. Yung, et al
Serial No.: **09/587,960**
Filed: **June 6, 2000**
For: **RESOURCE ALLOCATION METHOD FOR MULTI-PLATFORM COMMUNICATION SYSTEM**

PD-200066
Attorney: V. D. Duraiswamy
Mailed: DECEMBER 9, 2002 - Mailed via **Express Mail # EF740970705US**
VDD:eth